

**Notice of Allowability**

Application No.

09/445,604

Examiner

Quang Nguyen, Ph.D.

Applicant(s)

ABATANGELO ET AL.

Art Unit

1636

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/23/03.
2. ☒ The allowed claim(s) is/are 162-196.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☒ to Paper No./Mail Date 5/23/00.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 3/22/04.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/02/04 has been entered.

Applicants' amendment filed on 12/23/03 has been entered.

Amended claims 162-199 are pending in the present application.

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with attorney James V. Costigan on March 18, 2004.

The application has been amended as follows:

**In the Claims:** Claims 197-199 have been cancelled. Claims 162, 170-172, 181-182 and 191-192 have been amended as follows:

**Claim 162:** A biological material comprising:

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a) at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa and germinative cells of hair bulbs,

b) a biocompatible and biodegradable three-dimensional matrix, on which said cellular line is seeded and grown, said matrix comprising a hyaluronic acid derivative selected from the group consisting of:

A) an ester of hyaluronic acid wherein part or all of the carboxylic groups of said hyaluronic acid are esterified with an alcohol of aliphatic, aromatic, arylaliphatic, cycloaliphatic series;

B) an autocrosslinked ester of hyaluronic acid wherein part or all of the carboxylic moieties of said hyaluronic acid are esterified with the alcoholic groups of the same or a different hyaluronic acid chain;

C) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with a hyaluronic acid ester having part or all of the carboxy groups of hyaluronic acid esterified with an alcohol of aliphatic, aromatic, arylaliphatic, [c] cycloaliphatic series; and

D) an O-, an N-sulphated hyaluronic acid and a derivative thereof,

c) optionally collagen and/or fibrin

d) optionally autologous or homologous keratinocytes

said autologous or homologous cellular line is cultivated in presence of a medium treated with autologous or homologous human fibroblasts or in a coculture with autologous or homologous human fibroblasts.

**Claim 170:** A process for preparing a biological material according to claim 162 comprising the following steps:

- i) [I] isolating at least one autologous or homologous cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,
- ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen, and
- iii) seeding said cellular line on said matrix in the presence of a medium treated with autologous or homologous human fibroblasts or in a co-culture with autologous or homologous human fibroblasts.

**Claim 171:** The process according to claim 170 wherein, when in step (i) the cellular line is selected from the group consisting of autologous or homologous skin adnexa and germinative cells of hair bulbs, the cellular line [(a) in step (iii)] is optionally seeded in association with autologous or homologous keratinocytes.

**Claim 172:** A process for the preparation of the biological material according to claim 164 comprising the following steps:

- i) isolating endothelial cells from human umbilical vein by enzymatic digestion with collagenase;

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- ii) amplifying said cells on collagen treated dishes,
- iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen, and
- iv) seeding said endothelial cells in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and germinative cells of hair bulb [and optionally] in the presence of a medium treated with autologous or homologous human fibroblasts in primary culture or in a coculture with autologous or homologous human fibroblasts.

**Claim 181:** The biological material according to claim 162, wherein component (a) is an autologous cellular line as support for gene transfection.

**Claim 182:** The biological material according to claim 162, wherein component (a) is an autologous cellular line for use in gene transfection.

**Claim 191:** A process for preparing a biological material according to claim 183 comprising the following steps:

- i) isolating at least one cellular line selected from the group consisting of endothelial cells, glandular cells, skin adnexa, and germinative cells of hair bulbs,

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ii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen, and

iii) seeding said cellular line on said matrix in the presence of a medium treated with autologous or homologous human fibroblasts or in a co-culture with autologous or homologous human fibroblasts.

**Claim 192:** The process according to claim 191 wherein, when in step (i) the cellular line is selected from the group consisting of skin adnexa and germinative cells of hair bulbs [in step (iii)], [said] the cellular line is optionally seeded in association with keratinocytes.

**Claim 193:** A process for preparing the biological material according to claim 185 comprising:

i) isolating said endothelial cells from human umbilical vein by enzymatic digestion with collagenase;

ii) amplifying said cells on collagen treated dishes,

iii) preparing a biocompatible and biodegradable three-dimensional matrix, comprising at least one hyaluronic acid derivative and optionally fibrin and/or collagen, and

iv) seeding said endothelial cells optionally in association with a cellular line selected from the group consisting of glandular cells, skin adnexa and

germinative cells of hair bulb and in the presence of a medium treated with autologous or homologous human fibroblasts in primary culture or in a coculture with autologous or homologous human fibroblasts.

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**REASONS FOR ALLOWANCE:**

The following is an examiner's statement of reasons for allowance: The prior art of record does not teach or fairly suggests the biological material having the recited limitation of the presently claimed invention. Accordingly, the claims are allowable over the prior art of record. The examiner notes that the term "cell line" stands for a heterogeneous group of cells that are derived by subculture of a primary culture (see amendment filed on 6/03/2002, page 14), and the term "homologous" is defined as "pertaining to genetically dissimilar individuals of the same species; allogeneic (see amendment filed on 6/03/2002, page 15).


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang Nguyen, Ph.D., whose telephone number is (571) 272-0776.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's mentor, David Guzo, Ph.D., may be reached at (571) 272-0767, or SPE, Irem Yucel, Ph.D., at (571) 272-0781.

**To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1636; Central Fax No. (703) 872-9306.**

Quang Nguyen, Ph.D.

  
DAVID GUZO  
PRIMARY EXAMINER